

The oxygen/ozone mixture, which contains ozone and the added CO₂, is supplied to a contactor which has a through-flow of DI water. Ozone and CO₂ from the oxygen/ozone mixture dissolves in the DI water, producing ozonized DI water. Alternatively, the ozone can be supplied to the contactor in counterflow to the DI water. The ozonized DI water, possibly with the supply of further chemicals, is directed thorough the tank having the semiconductor elements in order to clean them.

The spent DI water is removed from the tank. The spent DI water can be filtered and re-circulated at least partially and can be remixed with the fresh ozonized water. The cleaning can be carried out in the tank while air is extensively or entirely excluded from the tank.

CO₂ can also be directed into the highly pure oxygen flow which is supplied to the ozone generator in order to achieve a stable ozone concentration behaviour of the oxygen/ozone mixture produced by the ozone generator. The CO₂ can be supplied in a concentration of 300 to 5000 ppm of the oxygen/ CO₂ mixture supplied to the ozone generator.

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Another embodiment of the invention entails a system for cleaning semiconductor elements. The system includes a container which receives the semiconductor elements. The container is connected to a device for generating ozonized, deionized (DI) ultrapure water via pipelines and having a discharge pipe for spent DI water. The device for generating the ozonized DI water has an ozone generator and a contactor, to which DI water is supplied and which is connected to the ozone generator. A CO₂ source is provided which is connected to a connection pipe, which directs the ozone/oxygen mixture between the ozone generator and the contactor via a valve in order to introduce CO₂.

The ozone generator can have a supply pipe for highly pure oxygen. The oxygen supply pipe can be connected to the CO₂ source via a control element such as a choke. The container can be configured as an overflow tank with a collection device for the spent DI water. A part of the spent DI water can directed into the circulation via a filter and cleaning device. The container can be sealed from the environment.--
